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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/723,746	11/25/2003	Hongyu Wang	03049US	8965
61611 7590 10/20/2008 ROHM AND HAAS ELECTRONIC MATERIALS CMP HOLDINGS, INC. 451 BELLEVUE ROAD NEWARK, DE 19713				
EXAMINER				
CHEN, KIN CHAN				
ART UNIT		PAPER NUMBER		
1792				
MAIL DATE		DELIVERY MODE		
10/20/2008		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/723,746

Applicant(s)

WANG, HONGYU

Examiner

Kin-Chan Chen

Art Unit

1792

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 September 2007.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
4a) Of the above claim(s) 8-10 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-7 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/CDC)
4) ☐ Interview Summary (PTO-413)
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____
Paper No(s)/Mail Date _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. Claims 1-7 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In claim 1, 4, and 6, the polynaphthalene surfactant being over-saturated" is new matter. Applicant pointed out specification's paragraph 7 for the basis for the support. However, the examiner notes that the instant claims recite at least 0.001, 0.010, or 0.05 to 5 weight percent polynaphthalene surfactant in the polish slurry. Therefore, the concentrations of polynaphthalene surfactant in the polish slurry shown in the instant claims (such as 0.001, 0.010, or 0.05 to 5 weight percent) do not have the support in the applicant' specification that are being over-saturated. Furthermore, There is no support in the applicant' specification that shows the pH values (such as less than 10, or 5, or 4 in the instant claims) while the polynaphthalene surfactant being over-saturated in the slurry.

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A range or limitation (at least 0.001, 0.010, or 0.05 to 5 weight percent polynaphthalene surfactant in the polish slurry) together with a limitation (such as the polynaphthalene surfactant being over-saturated in the slurry) in the same claim is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c).

Claim Rejections - 35 USC § 103

3. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miura et al. (US 6,027,669) as evidenced by Yang et al. (US 2005/0090104) and Scherber et al. (US 5,858,813).

Miura teaches, a polishing composition useful for polishing semiconductors (column 1, lines 1-2) and which comprises silica and water (Abstract column 3, lines 8-11). The content of silica is from 0.1 to 50 by weight (column 3, lines 56-59). Various additives such as surfactants such as sodium alkylbenzene sulfonate and a condensate of formalin with naphthalene sulfonic acid (same as applicant's polynaphthalene and sulfonated polynaphthalene surfactant) and aluminum oxides, zirconium oxides and titanium oxides, can be incorporated into the polishing composition (column 5, line 51 - column 6, line 8). Miura also teaches the polishing composition has a pH of at least 7

(column 6, lines 33-35), which encompasses a pH of less than 10. The aforementioned reads on,

An aqueous polishing slurry suitable for chemical mechanical polishing semiconductor substrates, comprising, by weight percent:

0.1 to 40 weight percent metal oxide particles, the metal oxide particles having a surface and a positive surface charge;

at least polynaphthalene surfactant; and

a balance of water with the slurry, in claim 1;

wherein the metal oxide particles comprise an abrasive oxide selected from the group comprising alumina, aluminum hydroxide oxide, ceria, iron oxide, lanthanum oxide, magnesium oxide, nickel oxide, silica, titania, yttria and zirconia, in claims 2, 5, and 7;

wherein the metal oxide particles are alumina in claim 3;

An aqueous polishing slurry suitable for chemical mechanical polishing semiconductor substrates, comprising, by weight percent:

0.25 to 25 and 0.5 to 15 weight percent metal oxide particles, the metal oxide particles having a surface and a positive surface charge and the metal oxide particles comprising an abrasive oxide selected from the group comprising alumina, aluminum hydroxide oxide, ceria, iron oxide, lanthanum oxide, magnesium oxide, nickel oxide, silica, titania, yttria and zirconia;

at least polynaphthalene surfactant; and

a balance of water, respectively in claims 4 and 6.

Since Miura's polishing composition comprises the same chemicals as that of Applicant's polishing slurry, then using Miura's composition in the same manner as claimed by Applicant would result the same in the polynaphthalene surfactant being detectable in solution of the aqueous polishing slurry, as recited in claims 1, 4, and 6.

Miura differs in failing to specify the content of polynaphthalene surfactant as recited in claims 1, 4, and 6 and the slurry having a pH of less than 5 and 4, respectively in claims 4 and 6.

However, Miura illustrates the specific combination of a metal oxide particles, surfactant, and water is known. Since Miura teaches the same composition as claimed in the present invention, then using Miura's composition in the same manner as claimed by applicant would result the same in polynaphthalene surfactant for adsorption with at least a portion of the surface of the metal oxide particles in situ and for reducing scratching of the semiconductor substrates (see col. 3, lines 40-53; col. 9, lines 29-31, no scratches found in the product). Furthermore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to select any proportion surfactant (e.g., so-called "surfactant being over-saturated" in instant claims) and pH in the Miura reference that would effectively accomplish the disclosed composition because it has been held that there is no invention where the difference in proportions is not critical and was ascertained by routine experimentation

because the determination of workable ranges is not considered inventive. See *In re Swain and Adams*, 70 USPQ 412 (CPA 1946). See also Yang ([0044]) and Scherber (col.6, lines 3-28) as evidence for showing that the surfactant is a result –effective variable. Yang and Scherber disclose the effect of surfactant and using various concentrations of surfactant in CMP composition to improve the quality of the product.

Response to Arguments

4. Applicant's arguments filed September 20, 2007 have been fully considered but they are not persuasive.

Applicant has argued that Miura recites the compound usually has a pH of at least 7 so that it stably contains the basic compound. It is not persuasive. Miura makes user aware of some defects. Miura does not state that the slurry with other pH values should not or can not be used. Applicants are reminded that the claiming of a non-preferred embodiment does not distinguish over the prior art since non-preferred embodiments constitute prior art. See MPEP 2123.

Applicant has states Miura does not disclose the use of an over-saturated surfactant. It is not persuasive. As has been stated in the office action, it would have been obvious to one of ordinary skill in the art at the time the invention was made to select any proportion surfactant (e.g., so-called "surfactant being over-saturated" in instant claims) that would effectively accomplish the disclosed composition because it has been held that there is no invention where the difference in proportions is not critical

and was ascertained by routine experimentation because the determination of workable ranges is not considered inventive. See *In re Swain and Adams*, 70 USPQ 412 (CPA 1946). See also Yang ([0044]) and Scherber (col.6, lines 3-28) as evidence for showing that the surfactant is a result –effective variable. Yang and Scherber disclose the effect of surfactant and using various concentrations of surfactant in CMP composition to improve the quality of the product.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Yang (US 2005/0090104; [0044]) discloses the effect of the surface-active agent in the slurry on CMP. Yang discloses that surface-active agent may be used to improve surface smoothness of polished metal film and reduce the defect and improve the within-wafer uniformity of removal rate. In the art of CMP, Scherber et al. (US 5,858,813; col. 6, lines 3-28) discloses that the amount of an additive (such as surfactant) used should be sufficient to achieve effective stabilization and to improve within-wafer-non-uniformity.
6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kin-Chan Chen whose telephone number is (571) 272-1461. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on (571) 272-1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kin-Chan Chen/

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October 14, 2008